

Name: _____

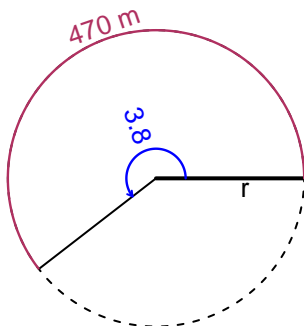
Date: _____

Trig Final (TEST v600)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

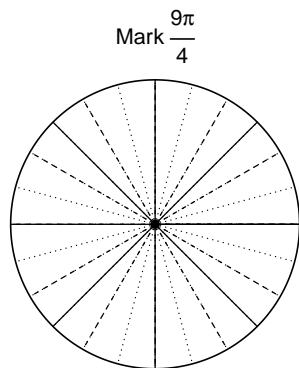
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 3.8 radians. The arc length is 470 meters. How long is the radius in meters?

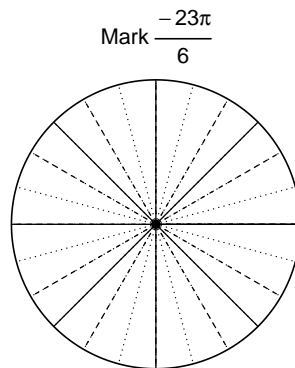


Question 2

Consider angles $\frac{9\pi}{4}$ and $-\frac{23\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{9\pi}{4}\right)$ and $\cos\left(-\frac{23\pi}{6}\right)$ by using a unit circle (provided separately).



Find $\sin(9\pi/4)$



Find $\cos(-23\pi/6)$

Question 3

If $\sin(\theta) = \frac{45}{53}$, and θ is in quadrant II, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 4.86$ meters, a frequency of 6.63 Hz, and an amplitude of 3.48 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).